

Vietnam's Policy on Supporting Enterprises in Technology Mastering in the Fourth Industrial Revolution

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Abstract: Supporting enterprises to master technology plays an important role in enhancing endogenous technological capacity of enterprises and promoting economic development based on science, technology and innovation. In Vietnam, the Government has paid attention and put priorities on supporting enterprises to improve their technological mastery. However, the technological level of Vietnamese enterprises is still low, negatively affecting the position and competitiveness of enterprises as well as economic development of the country. Based on assessment of the current status of technology mastering support policies, this paper proposes policy recommendations on improving technology mastery of enterprises in accordance with Vietnam's conditions in the context of the fourth industrial revolution. The research conducted a survey to investigate enterprises most of whom are in the mechanical industry to collect information on the current situation of enterprises' technology and their benefits from supporting policies on enterprises' technology mastery. Questionnaires were sent to 132 enterprises with 89 responses. Based on survey results, the authors suggest that the Vietnamese Government should create favorable conditions for enterprises to set up a research and development department in order to accelerate the process of research, improvement, decoding, mastering and innovation of technologies; support businesses in seeking technological information, improving the procedures of credit incentives for businesses in technology innovation and transfer, improving the capacity of human resources to master and apply scientific and technological advances; and create a more favorable legal corridor to accelerate the process of applying technologies of the fourth industrial revolution into production and business.

Keywords: Technology Mastery, Policies on Supporting Technological Mastery

1. Literature Review

Mastery is generally understood as having a right of ownership and use, or the ability to manage, direct, operate and control. Mastering requires regular self-study and practice, search and update information to actively adapt and respond to changes of the environment.

Mastering technology depends heavily on the

technological capacity of business. According to Fransman (1986)[1] and Sharif (1987)[11], technological capacity is related to the capacity of enterprises to conduct research and development activities in order to effectively convert inputs into outputs. Accordingly, technological capacity is the ability to effectively deploy existing technologies and cope

with major technological changes. Technological capacity is included of the capacity for seeking and selecting imported technology, absorbing, using, adapting and improving imported technologies, and innovating technologies. Technology innovation capacity includes transferred technology adaptive capacity with minor changes in products, product design and materials; Replication capacity (replication with slight changes in technological processes); Transferred technology adaption capacity with major changes in products, product design and materials and technological processes; Capacity to conduct research and development, technological process design based on research and development results; and technological innovation capability (creating completely new products).

According to the United Nations Industrial Development Organization [12], technological capacity includes the capacity to train human resources; to conduct basic research; to test technical facilities; to receive and adapt technologies; and to provide and process information. According to the World Bank (2004)[14], technological capacity is divided into three categories: Production capacity (including production management, production techniques, maintenance of production facilities, and product marketing); Investment capacity (including project management, project implementation, procurement capacity, human resource training); and innovation capacity (including the ability to innovate and applying new technologies in economic activities). According to OECD (1996)[7] and Ramanathan (1995)[10], technological capacity includes the capacity to absorb, innovate and create technology. Technology absorption capacity is only at the level of receiving technology through technology transfer without significant improvement and upgrading of such technologies; technological innovation capacity is assessed at a higher level than the technology absorbing capacity; while technological invention is considered the highest level that creates fully new production process or products.

The above studies show that technological mastery of enterprises is the research, seeking, evaluation and selection of appropriate technologies to import, absorb and operate effectively the imported technologies, then adapt, assimilate, improve, decode imported technologies and create new technologies, products and processes to enhance enterprises' competitiveness. In Vietnam, policies on supporting enterprises in technology mastering are defined as a kind of science and technology policy. According to Nguyen Huu Xuyen (2014)[6]: (i) Science and technology policy is a set of incentive measures for pushing social groups to carry out scientific and technological activities to reach scientific and technological goals; (ii) Science and technology policy is an action of the State to influence the results of scientific and technological activities, contributing to the implementation of national goals in specific period; (iii) Science and technology policies include science and technology strategies and plans to achieve certain purposes based on national political directions; (iv) Science and technology policy is a part of the national technology infrastructure, which includes

orientation, priorities and measures for scientific and technological development of countries. In the national innovation system, science and technology policy is a category of innovation policy in which the state intervenes to influence technological development and innovation related to technology research and development activities [8, 9].

In summary, the policy to support technology mastering is defined as the views, orientations, solutions and tools provided by the state to orient, encourage and motivate enterprises to master technologies by raising the technological capacity, supporting enterprises to receive, adapt, assimilate, improve and innovate technologies, contributing to the implementation of national goals in specific period. This paper focuses on key policies on supporting technology mastery including: Policies to support the formation of research and development division; Policies to support technology seeking, evaluation and selection; Credit support policy; Human resource development policy for technological mastery. These are critical policies that have a strong influence on technology decoding, mastering and innovation in enterprises [5].

2. Research Method

In order to conduct this research, the authors employed the following research methods:

First, the historical research to investigate the process of supporting policies for Vietnamese enterprises since the Law on Technology Transfer (2006) came into effect, then to assess strengths and limitations of Vietnam's policies on supporting technology mastery in specific periods.

Second, the survey method to investigate enterprises most of whom are in the mechanical industry- the foundation industry that plays a critical role for the rapid and sustainable development, economic independence and autonomy, ensuring the deep and effective participation of the economy in the global production and distribution network (This has been affirmed by Vietnamese Communist Party's Resolutions and the Development Strategy for mechanical industry until 2025, vision to 2035 as set in the Decision No. 319/ QD-TTg dated March 13, 2018 of the Prime Minister of Vietnam). Questionnaires were sent to 132 enterprises with 89 responses. The survey aimed to collect information on the current situation of enterprises' technology and their benefits from supporting policies on enterprises' technology mastery.

Third, the expert method to conduct interviews to gather opinions of experts on supporting policies for enterprises' technology mastery, then contribute recommendations on improvement of policies to support enterprises to master technology in Vietnam.

3. Research Results

3.1. Vietnam's General Policies on Supporting Technology Mastery

In the Law on Technology Transfer (2006, 2017), policies

on technology transfer, a list of technologies banned, restricted and encouraged to transfer into Vietnam, and incentives for technology receiving and mastering were issued. The Law on Science and Technology (2000, 2013) encouraged the reception and transfer of technologies to promote the scientific and technological market; the establishment of science and technology service providers, centers for technology transfer promotion and support, technological e-platform, technology and equipment marketplaces, etc. to support technology seeking and transferring into Vietnam. In addition, there are laws related to technology transfer such as the Law on High Technology (2008), Law on Management and Use of State Assets (2017), Law on Intellectual property (2005, amended 2009). The criteria, documents and procedures for import and inspection of used machines, equipment and technological lines have also been issued and implemented (Decision No 18/2019/QD-TTg dated April 19, 2019 of the Prime Minister). As of February 2020, there are 17 organizations appointed to inspect used machinery, equipments and technological lines under the provisions of Decision No. 18/2019/QD-TTg.

The National Technology Innovation Fund has supported technology mastery and transfer. The Fund was established under the Decision No. 1342/QD-TTg dated 05 August, 2011 of the Prime Minister and Decision No. 1051/QD-TTg dated 03 July, 2013 by the Prime Minister on issuing the Regulations on the organization and operation of the National Technology Innovation Fund. The rules and criteria for selecting science and technology tasks of the National Technology Innovation Fund are implemented in accordance with the Circular No. 06/2014/TT-BKHCN dated April 25, 2014 of the Ministry of Science and Technology.

According to the Program for Foreign technology seeking and transfer until 2020 (Decision No. 1069/QD-TTg dated April 4, 2014 by the Prime Minister), technology seeking and transfer to Vietnam should focus on source and advanced technologies towards national scientific and technology policy and strategy; creating new technology products and services to meet requirements of socio-economic development; Encouraging enterprises and scientific and technological organizations to seek and transfer technologies. The goal of this Program is to find, evaluate, consult and transfer advanced technology in the world, to timely serve the needs of developing new technology products and services, to raise the productivity, quality and value-added of products and goods of Vietnamese enterprises; and to reach the goal of 60% technologies introduced by expert network being transferred and applied by 2020.

The Project on Promoting foreign technology transfer, mastering and development in Vietnam in priority sectors until 2025 with orientations to 2030 (Decision 1851/ QD-TTg dated Dec 27, 2018 by the Prime Minister) has the overall objective to guide foreign technology transfer, mastery and development into Vietnam, especially for source, high and foundation technologies in order to quickly innovate technology, shorten the gap in technological capacity compared with advanced countries in the region and the world, contributing to restructuring economic sectors in the industrialization and modernization progress.

In recent years, Vietnam has also enacted the legislation such as decrees and circulars to guide activities related to intellectual property and technology transfer and mastery as shown in Table 1.

Table 1. The legal documents instructing support for technological mastery in Vietnam.

| Decrees |
|---|
| Decree No. 122/2010/ ND-CP on amending and supplementing articles of Decree No. 103/2006/ ND-CP detailing and guiding the implementation of articles of the Intellectual Property Law |
| Decree No. 99/2013 / ND-CP on sanctioning of administrative violations in the field of Industrial Property (Replacing Decree No. 97/2010/ ND-CP on sanctioning of administrative violations in the field of Industrial Property) |
| Decree No. 35/2006/ ND-CP detailing the Commercial Law on franchise activities |
| Decree No. 69/2018/ ND-CP detailing articles of the Law on Foreign Trade Management |
| Decree No. 187/2013 / ND-CP of the Government detailing the implementation of the Commercial Law on international goods trading activities and agency activities of buying, selling, processing and transiting goods with foreign countries |
| Decree No. 133/2008/ ND-CP dated December 31, 2008 of the Government detailing and guiding the implementation of the Technology Transfer Law |
| Decree No 70/2018/ ND-CP dated 15 May 2018 of the Government detailing the management and use of asset formed through the implementation of state-funded scientific and technological tasks |
| Decree No. 08/2014/ ND-CP dated January 27, 2014 of the Government detailing and guiding the implementation of articles of the Law on Science and Technology |
| Decree No. 76/2018/ ND-CP of the Government detailing and guiding the implementation of the Law on Technology Transfer |
| Decree No. 111/2015/ ND-CP on development of supporting industries (including mechanical industry and automobile assembling and manufacturing) |
| Circulars |
| Circular No. 18/2011/ TT-BKHCN amending and supplementing a number of provisions of Circular No. 01/2007/ TT-BKHCN of February 14, 2007, amended and supplemented according to Circular No. 13/2010/ TT-BKHCN dated July 31, 2010 and Circular No. 01/2008/ TT-BKHCN dated February 25, 2008, amended and supplemented according to Circular No. 04/2009 / TT-BKHCN dated March 27, 2009 |
| Circular No. 16/2016/ TT-BKHCN of June 30, 2016 amending and supplementing articles of Circular No. 01/2007/ TT-BKHCN of February 14, 2007 guiding the implementation of Decree No. 103/ 2006/ ND-CP dated September 22, 2006 by the Government detailing and guiding the implementation of the Intellectual Property Law regarding industrial property, amended and supplemented under Circular No. 13/ 2010/ TT-BKHCN July 30, 2010, Circular No. 18/2011/TT-BKHCN dated July 22, 2011 and Circular No. 05/2013/ TT-BKHCN dated February 20, 2013 |
| Circular No. 31/2011/TT-BKHCN guiding the content and form of operation of technology appraisal and evaluation organizations |
| Circular No. 23/2015/TT-BKHCN regulating criteria, documents and procedures for importing used machinery, equipment and technological lines |
| Joint Circular No. 39/2014/TTLT BKHCN-BTC regulates the valuation of scientific research and technology development results, and intellectual property funded by the State budget |

Decrees

Circular No. 15/2014/ TT-BKHHCN regulating the order and procedures for transferring ownership and the right to use results of scientific research and technological development funded by the state budget
 Circular No. 06/2014/ TT-BTC of the Ministry of Finance on issuance of valuation standards No. 13 (Valuation of intangible assets)
 Circular No. 10/2019/ TT-BTC of the Ministry of Finance guiding the determination of asset value as a result of scientific and technological tasks funded by the State budget

Source: Collected by the authors

3.2. Policy to Support Businesses in Establishing Research and Development Divisions

The Vietnamese Government has paid special attention on supporting the establishment of technology research and development (R&D) departments in enterprises to master, transfer and renew technologies funded by the Science and Technology Fund. Previously, for 100% state-owned enterprises as per Clause 8, Article 4 of the Law on Enterprises 2014, the minimum rate that state-owned enterprises had to deduct from taxable income to form their own Science and Technology Fund was 3% (Clause 1, Article 9 of Decree No. 95/2014 / ND-CP). So far, however, all businesses (not only State- owned enterprises as before) are encouraged to set up Science and Technology Fund, decide deduction rate for research and development activities, including the research, innovation, decoding, mastering and transferring of technology. The research and development divisions encourages cooperation and joint research and development in the enterprises, which is one of the guidelines and policies of the Party and the State to accelerate learning, catching up with advanced technology level of advanced countries, build capacity to acquire, master and improve technology with investment and support from the state. According to Tran Van Tung (2020), the Ministry of Science and Technology encourages the import of advanced technologies, decoding, mastering and localizing imported technologies; link and cooperate enterprises, research institutes and universities in technological innovation and mastery; improve incentive mechanisms to encourage and motivate enterprises to invest in technology import, transfer and research to raise technological absorption, development and innovation capacity; promote transfer of technology from abroad into Vietnam, especially high, advanced and clean technologies in priority sectors.

The policy of supporting mechanical enterprises to set up research and development department is a foundation for enterprises to have access to advanced science and technology in the world and to generate research and development ideas to create new products and processes. This helps businesses prevent and solve problems in the process of operating, mastering, assimilating, improving, replicating and creating new technologies and processes. However, there are still few numbers of enterprises with a research and development department. According to GSO (2017), only 464 out of 7,450 enterprises participated in the survey confirmed to have research and development activities (accounting for 6.23%). Another survey of more than 200 enterprises in 2017 of the Institute for Economic

Research and Development showed that only 22.8% of manufacturing enterprises and 25% of assembling enterprises had research and development division. This result is not much different from the results of the Vietnam Chamber of Commerce and Industry (VCCI, 2015) survey on research and development activities of small and medium-sized enterprises. Less than 50% of the surveyed businesses have a research and development department. These figures are also similar to the results of the Ministry of Science and Technology (2018) survey of innovation activities of processing and manufacturing enterprises.

In our survey on 132 enterprises with 89 responses, 58,5% of enterprises agreed that "The policy on supporting enterprises to set up research and development divisions is not highly effective". This shows businesses are still inactive and not really interested in policies to support enterprises to set up research and development divisions. Only 38.2% of businesses have research and development divisions while the others just have plan to set up research and development divisions, or do not have a plan. This passivity is correlated with the technology level and investment rate for technological innovation of enterprises. Our survey results also show that most enterprises are using average and backward technology for production and business (accounting for 56.2%). The rate of investment for technological innovation per revenue in the past three years is still low: 7.9% of enterprises invest under 1% of revenue, 46.1% of enterprises invest from 1 to 2%, 31.5% of enterprises invest from 2 to 3% and only 19.1% of enterprises invest more than 3% of revenue for technological innovation annually.

3.3. Policy to Support Businesses in Seeking, Evaluating and Selecting Technologies

In order to support enterprises in technology seeking, evaluation and selection, the Prime Minister issued Decision No. 1069/ QD-TTg dated July 4, 2014 approving the Foreign Technology Seeking and Transfer Program until 2020, detailed as below:

The State supports the selection of technology seeking experts who are qualified with deep knowledge and skills in analyzing world technology development trends and assessing, evaluating and consulting technology transfer; organizing and supporting experts in national priority science and technology sectors, including mechanical engineering; supporting the organization of scientific conferences and workshops for technology seeking experts and supporting domestic enterprises in seeking foreign technologies.

Regarding the support for technology seeking and

selection, the government supports the development of technology-ordering lists from businesses, and the technology seeking order (including technical requirements, technological processes, purpose of the technology use, the source of the technology, the receiving capacity of the technology transferred unit); support organizations to seek technology, conduct research, develop reports on international technology profiles that belong to the list of technology in orders; support technology seeking in such a form as technology demonstrations, technology exhibitions, hiring technology experts, consulting technology, analyzing patents.

Regarding technology transfer and technology transfer support: Based on international technology reports that have been sought and appraised, enterprises proposed to place orders for technologies and develop technology transfer project proposals. Costs for developing technology transfer project proposals and implementation of feasible technology transfer projects are partially funded by the State budget.

Priorities are given to support main contents of technology transfer projects such as intensive training, study tours, modeling, testing, examining, inspecting quality, manufacturing on a trial scale in Vietnam, hiring consultants for training and technology transfer, organizing seminars on technology transfer.

To support businesses, the Government has issued Decree No. 76/2018/ ND-CP guiding the implementation of the Law on Technology Transfer (2017), which specifies lists of transferring - encouraged technologies (43 lists), list of high technologies prioritized for investment and development under the Law on High Technology, lists of technologies restricted from transferring to Vietnam (34 lists) and lists of technologies prohibited from transferring to Vietnam and in Vietnam (48 lists). Enterprises that receive and transfer technologies in the list of technologies encouraged to transfer will be given priority and receive incentives in accordance with the Law on Technology Transfer.

Table 2. Policies to support enterprises in seeking, evaluation and selection of technology.

| Policies to support enterprises in seeking, evaluation and selection of technology | | % agree |
|---|--|----------------|
| 1 | Support for enterprises to access database to seek technologies is not good | 52.8% |
| 2 | Support for enterprises to assess and valuate technologies is not good | 53.9% |
| 3 | Support for enterprises to select technologies to be transferred is not good | 48.3% |

Source: Survey results

In general, policies to support businesses in seeking, evaluating and selecting technologies have positive and direct impact on technological receipt, mastery and innovation of the enterprises. However, these policies still have certain limitations. Our survey shows that 52.8% of interviewed businesses agree that the State support to access databases to seek technology is not good, 53.9% of businesses agree that support for enterprises to assess and valuate technologies is not good, and 48.3% of businesses agree that support for enterprises to select technologies to be transferred is not good (Table 2). One of the underlying causes of this condition is that the policy making process is not business-oriented, and the policy enforcement is not well organized (56,3% of businesses agree with this statement).

3.4. Policies for Credit Support

The purpose of the credit incentive policy is to provide financial support for businesses through loans, borrowing procedures, interest rates and loan periods to motivate businesses in technology receiving, mastery and innovation. According to Decree No 76/2018/ ND-CP of the Government, enterprises investing in facilities for technology decoding (that includes investment in laboratories, sample analysis, modeling and simulation, testing workshops, inspection and modeling, etc.) may enjoy incentives and supports such as: Capital support, loan guarantee, loan interest rate support from the National Technology Innovation Fund and credit institutions, priorities to invest in hi-tech parks (Enterprises may receive

a maximum support of 2%/year on loan interest from the National Technology Innovation Fund or Science and Technology Development Fund of ministries, ministerial-level agencies or provinces and cities if they have investment projects for technology transfer); Financial support through science and technology tasks or direct support.

Enterprises with technology application and transferring to produce prioritized supporting industry products may enjoy a maximum of 50% trial manufacturing cost. Small and medium enterprises may get a loan up to 70% of the capital provided by credit institutions under the following conditions: Having the total value of mortgaged and pledged assets at credit institutions equal to at least 15% of the loan value after deducting the value of pledged or mortgaged properties for other loans; having at least 20% of equity to contribute to investment projects after deducting the equity arranged for other projects; having no outstanding debts to the state budget or bad debts at credit institutions or other economic organizations at the time of the guarantee proposal (Decree No 111/2015/ ND-CP of the Government). Businesses may also receive other supports on loan interest rate, loan capital, and loan period if they meet the requirements of other support funds such as: National Science and Technology Development Fund, Science and technology development fund of ministries, branches, provinces and cities, Science and technology development fund of organizations and individuals, Science and technology development fund of enterprises.

Vietnam has witnessed achievements in credit incentives

to support businesses in technology mastery. These incentives, however, are not strong and supportive enough to encourage businesses in technology reception and mastery (about 61,8% of interviewed enterprises agree with this statement). The main cause of the situation is the complicated procedure and low level of incentives (58,4% of interviewed businesses agree with this statement).

3.5. Policies on Human Resource Development to Support Technological Mastery

Human resource quality is one of decisive factors that determine enterprises' capacity to receive and master technology. Therefore, policies to support training and capacity building for enterprises to absorb and master new technologies are very important. According to Decree No 76/2018/ND-CP of the Government and Decision No 677/2011/QĐ-TTg dated May 10, 2011 of the Prime Minister on National technology innovation program until 2020, enterprises may receive support for human resource development for technological mastery as follows:

Regarding the content of training and capacity building for technological absorbing and mastering: technology management, new technology updating, technology seeking; negotiation and technology transfer; technology performance and exploitation; technology adaption, improvement and decoding; product design and development based on technology.

Regarding the activities of training and capacity building for technological absorbing and mastering: survey, training needs assessment; training evaluation; management, monitoring and evaluation of national training programs for enterprises; design of training curriculum; development of training programs, compilation of training materials; Training for trainers and training for enterprises.

Regarding the forms of training and capacity building for technological absorbing and mastering: training workshop, training at enterprises and online training. Sources for funding shall be taken from State budget for scientific and technological activities, science and technology development fund of enterprises, ministries, ministerial-level agencies, provinces and cities; national science and technology programs and other programs and projects of ministries, branches and localities.

According to Decision No 677/QĐ-TTg of the Prime Minister, by 2020, 100% of enterprises manufacturing national key products shall master and create advanced technologies to manufacture products; 80,000 engineers, technicians and managers of small and medium enterprises are trained in technology management and update.

Article 15 of the Law on Support for Small and Medium-sized Enterprises (2017) stipulates that small and medium-sized enterprises are exempted or deducted from the cost for training courses funded by the state budget on business start-up and management, and vocational training; The State also provides online training programs and other training programs on mass media for small and medium-sized enterprises; supports direct training at small and medium

enterprises in manufacturing and processing sectors. The Decree No 39/2018/ND-CP has also provided regulations on incentives and supports for vocational training and in-company training. In addition, the State also supports enterprises in seeking information, consulting, transferring, training human resources to master and develop technologies through national science and technology programs (Decision Decree No. 1851/QĐ-TTg dated December 27, 2018 of the Prime Minister).

In general, the policies for supporting human resource development of enterprises have brought positive effects, but there are still limitations in policy implementation process. The results of our survey on 89 enterprises showed that 59.6% of interviewees were not really satisfied with policies on human resource development to support technology mastery. This suggests that the training content, curriculum and methods should be improved to further support human resource development of enterprises to master technologies.

4. Conclusions and Recommendations

The fourth industrial revolution is taking place vigorously, creating opportunities as well as bringing challenges to nations, requiring countries especially developing countries like Vietnam to ceaselessly research to proactively respond and adapt quickly to the changing environment of technology. Therefore, in order to improve the national endogenous technology capacity, enhance the technological mastery of the enterprise and contribute to the goals of Plan for promoting technology transfer, mastery and development from overseas to Vietnam in priority sectors and fields until 2025 with orientation toward 2030 (Decision No. 1851/QĐ-TTg dated December 27, 2018 of the Prime Minister); put priorities on supporting the transfer, mastery and development of source and cutting-edge technologies from overseas; shortened the gap in technological level and capacity compared with other countries in the region and the world; in the coming time, Vietnam needs to take measures as follows:

First, creating favorable conditions for enterprises to set up a research and development department in order to accelerate the process of research, improvement, decoding, mastering and innovation of technologies. It is necessary to support enterprises to fund for research and development activities by establishing their own scientific and technological development funds; support enterprises in planning research, using fund efficiently, identifying their strengths, weaknesses and competitive advantages based on technology development, mobilizing resources to apply and adapt production technologies in order to make products of high quality and accepted by the market and society.

Second, although in recent years the technology level of Vietnamese enterprises has tended to rise and many of them have mastered some modern and advanced technologies, however, the support for businesses in seeking, evaluating and selecting appropriate technologies have yet to be

promoted. Therefore, it is necessary to support businesses in seeking technological information. Technology information may help businesses set goals to receive and master technologies compatible with their resources and development goals in each period. This will also help enterprises timely adjust themselves to major technological changes and identify new technologies, which greatly affect their development. Moreover, it is necessary to support businesses to use patent and technology databases to accelerate the process of technology seeking, transfer and mastery; then create, develop and update an expert database with technical infrastructure, hardware and software systems to support business in technology evaluation and selection.

Third, improve the procedures of credit incentives for businesses in technology innovation and transfer, support enterprises to access preferential capital policies when participating in high technology development programs, intellectual property development programs, productivity and quality improvement programs, bilateral cooperation programs, national product programs, and other science and technology for technology mastery in business. Enhance the operation efficiency of the Small and Development Fund, the National Technology Innovation Fund, the Science and Technology Development Fund, provide long-term and suitable interest rate loan for business. Raise the role of credit guarantee funds, venture capital funds and leasing to small and medium enterprises to buy equipment, machines and new technological lines.

Fourth, support businesses to improve the capacity of human resources in terms of quality and quantity to master and apply scientific and technological advances; to design and organize training programs to meet the needs of technological seeking, selection, evaluation, negotiation and transfer; to improve their technological innovation capacity in terms of manipulation, maintenance, testing, adaption, product and process improvement. The effort of enterprises themselves in improving the human resource quality for technological mastery is not enough, therefore the State supports in providing expert database and training programs are necessary. The State should support businesses to improve the quality of human resources through projects on technological innovation training on the basis of evaluating the compatibility between national technological innovation goals and businesses' technological mastery goals and specifically identifying the training needs, trainees, forms, contents and duration of trainings.

It is also necessary to create a more favorable legal corridor to accelerate the process of applying technologies of the fourth industrial revolution into production and business;

encourage research and development activities and use of business funds for science and technology, technology incubators, innovation start-up, commercialization of research results; encourages the cooperation between enterprises and institutes, universities and scientific and technological organizations to implement investment projects in technology innovation, transfer and mastery.

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